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Lipkin

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[54] **METHOD AND APPARATUS FOR INCREMENTALLY GENERATING A VIRTUAL THREE-DIMENSIONAL WORLD**

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[52] **U.S. Cl.** **707/10**; 1/3

[58] **Field of Search** 707/1, 3, 10; 380/7, 380/4, 24, 25, 28; 382/276; 713/200; 709/203; 370/355; 395/701; 345/339

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[57] **ABSTRACT**

Mechanisms and methods for storing and selectively generating a three-dimensional virtual world are disclosed. A virtual world is described in a source text according to the grammar of a modeling language. The source text is read, parsed, and decomposed into tables of a database in which characteristics of the world are represented in database tables. In an embodiment, nodes and fields of the world are associated with database queries. When the world is to be displayed, values in the database schema are recomposed into a source text. The world is segmented into regions, and proximity sensors are defined around the virtual position, within the world, of a client that is viewing the world. When the virtual position of the client changes, visible adjacent regions of the world are selectively loaded, recomposed, and displayed. Thus, large virtual worlds are efficiently displayed and easily modified.

52 Claims, 10 Drawing Sheets